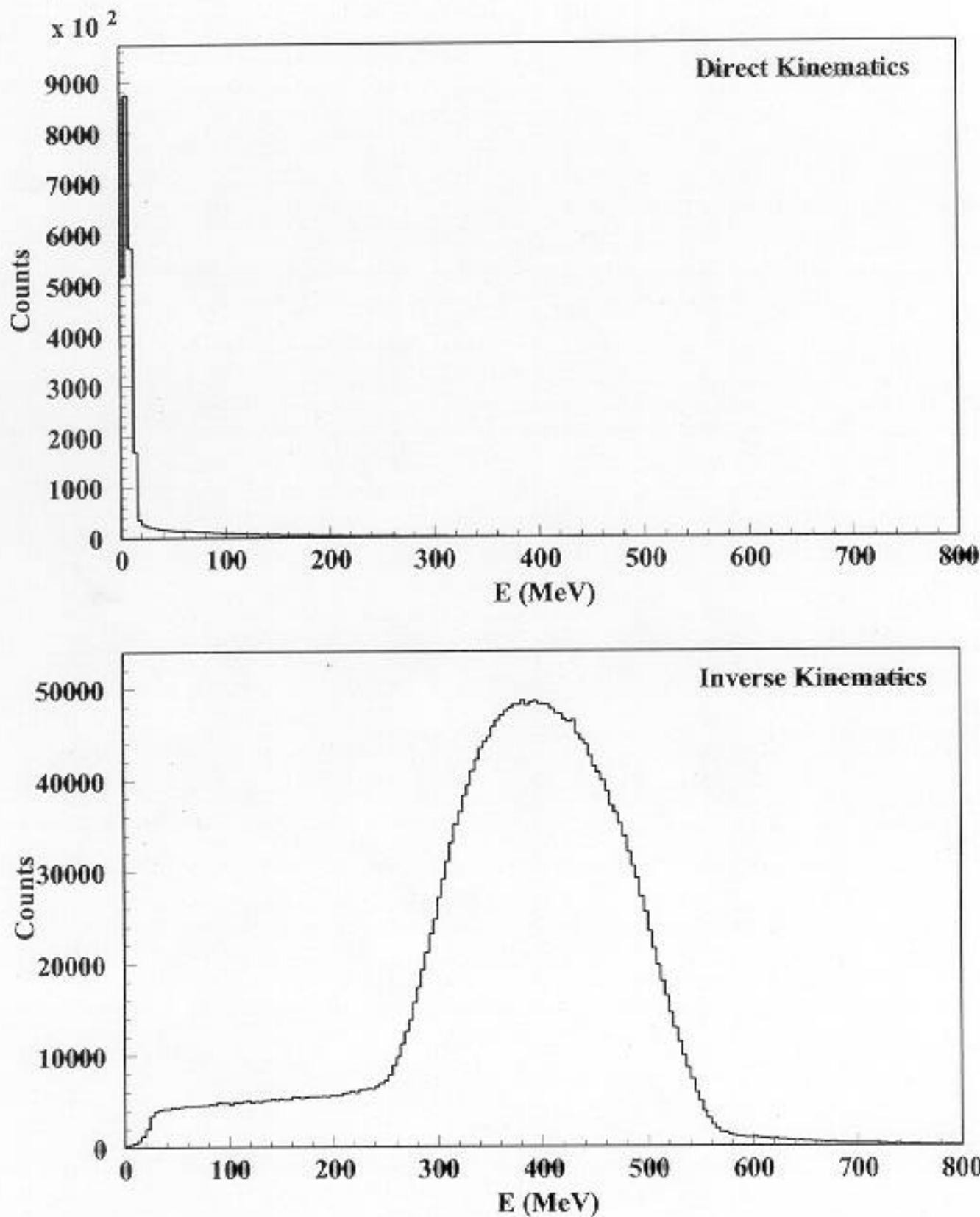
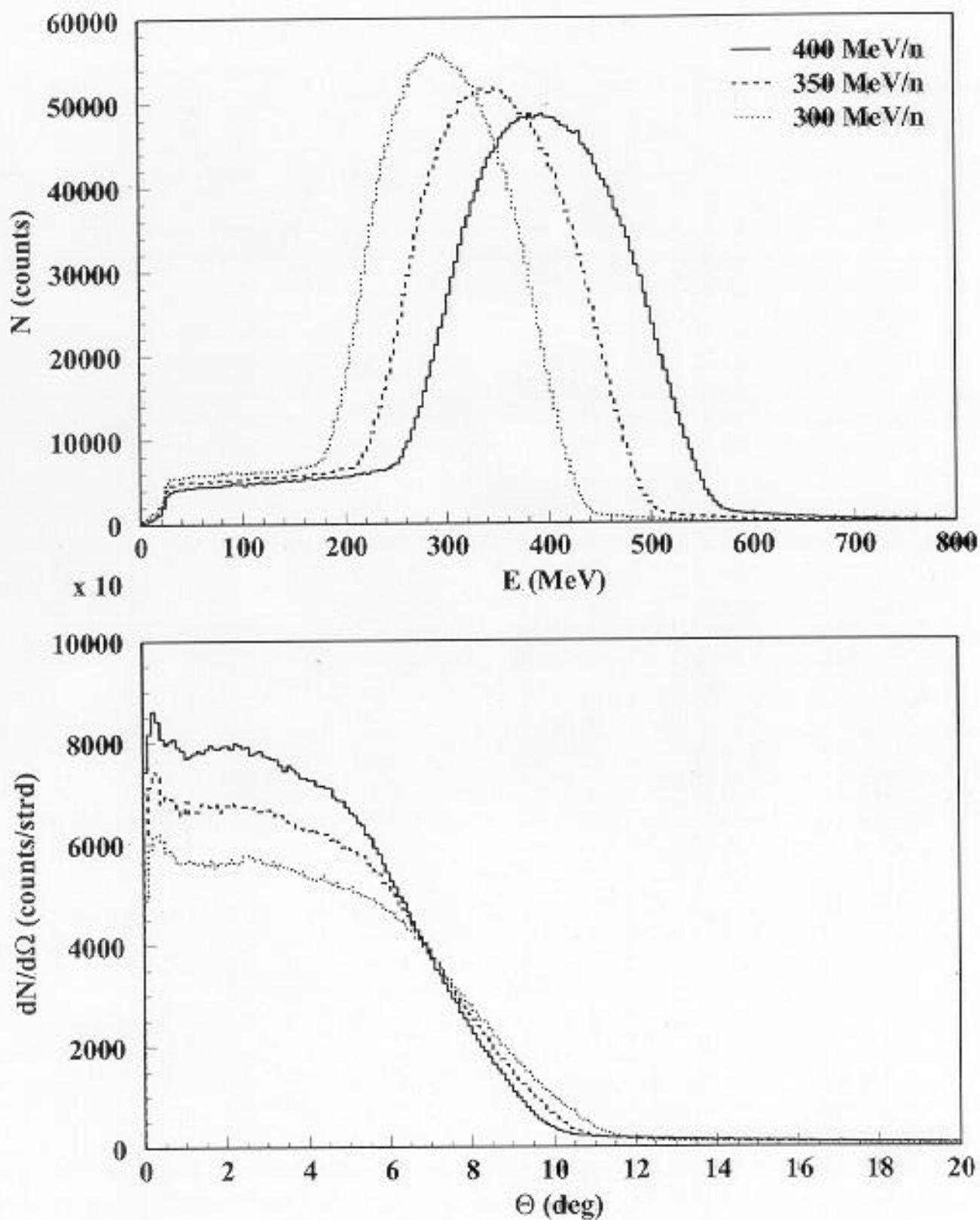


**Neutron energy spectra from  $10^5$  (U+Li) reactions at 400 MeV/n**



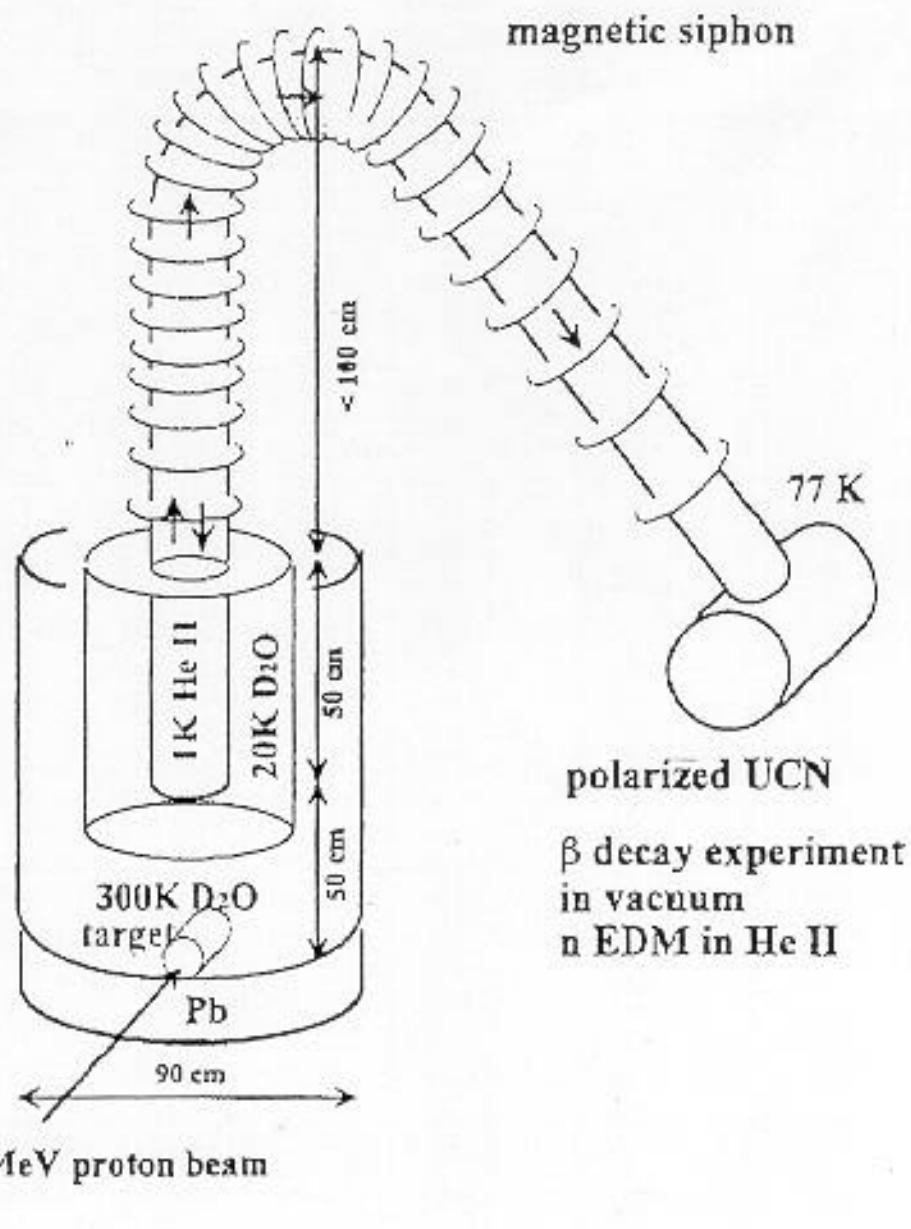
## Energy Drop Effect on the Energy-Angle Spectra of Neutrons



## Possibilities for Ultracold Neutrons at RIA

- ❖ **400 kW CW light-ion beams**
  - 0.9-GeV p, 1.2-GeV d, 2.1-GeV  $^3\text{He}$
  - $\sim 5 \times 10^{16}$  n/s from tungsten target
- ❖ **RIA is a nuclear physics facility**
  - Target areas will be flexible for customization
  - Beam can be shared with ISOL targets
    - Flexible beam pulse structure on RF- or macro-time scale
- ❖ **Accelerators induce less beam heating of cold moderators**
  - ~10x more neutrons per gamma than reactors
  - Moderator geometry can be designed to be radiation-heat limited

UCN production by  $p$  beam



Proposed UCN experiments at RCNP /Osaka